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ABSTRACT

Trends in minority representation in health professions and efforts to expand opportunity are discussed, and information on minority medical training programs of the Robert Wood Johnson Foundation is provided. During the mid-1960s to mid-1970s, public and private sector programs promoted minority recruitment, admissions, and retention policies for medical schools. From the mid-1970s onward, there has been a loss of momentum in efforts to increase ethnic diversity among medical students. Ways to increase the qualifications and size of the minority applicant pool for medical schools for the 1990s are addressed, including: improving academic skills and scores on the Medical College Admission Test, identifying potential physicians, providing role models and mentors, and providing financial aid. Training provided to blacks by the historically black colleges and medical schools is considered, along with the provision of health care to minorities. Types of programs funded by the Robert Wood Johnson Foundation are identified, as are the minority or nonminority disadvantaged groups served and participating schools for each program. Case studies of four minority individuals are presented, along with information on minorities in law and engineering. (SW)

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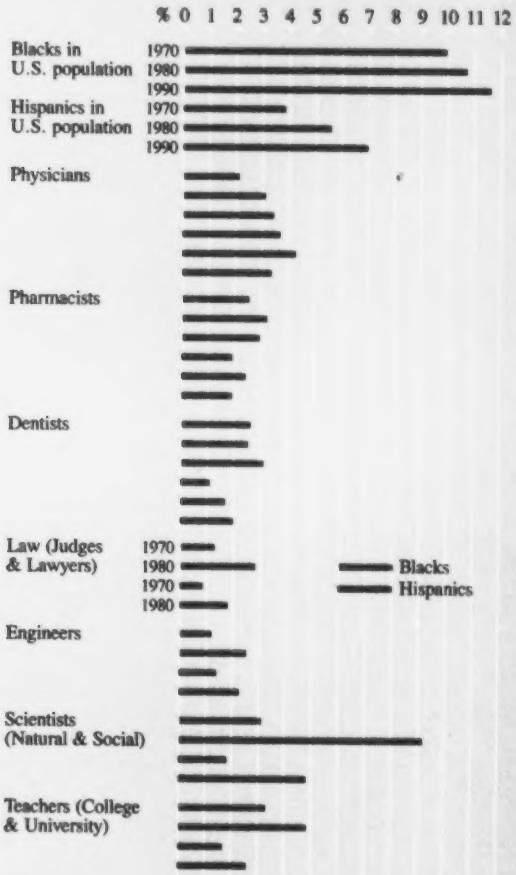
Figure 1

Percent of Blacks and Hispanics in the U.S. Population and in Selected Professions



NOTES: U.S. population data used exclude children. Data for natural scientists were not available in 1970, accounting for part of the increase between 1970 and 1980. Because of changes in Census Bureau procedures, comparisons between 1970 and 1980 data for Hispanics should be made cautiously.

SOURCES: U.S., Health Resources and Services Administration. *Estimates and Projections of Black and Hispanic Physicians, Dentists, and Pharmacists to 2010.* Washington, May 1986 (projections); U.S., Bureau of the Census, Washington (all other data).

Minority Applicants to Medical School are Better Qualified Today than in Mid-70's, Yet Less Likely to be Accepted.

While minority students' interest in medical careers has not flagged in the past twelve years, they face greater difficulty being accepted to medical school. Programs to increase the qualifications and number of minority medical school applicants have been shown to work and are important at all levels—high school, college, and medical school.

Summary

Blacks, Hispanics, and native Americans historically have been greatly underrepresented among the nation's professions.[1] From the mid-1960's through the mid-1970's, bolstered by programs and policies attempting to make social conditions more just and the distribution of important social goods and opportunities more equitable, the number of minority students entering professional degree programs grew rapidly. For example, prior to the early 1960's, less than three percent of all medical students were black, but by 1974, 7.5 percent were black and 10 percent were minority. The years since then, however, have witnessed the leveling off of this hard-won progress.

Despite substantial increases during the 1970's in the absolute numbers of minority professionals, minorities are still markedly underrepresented relative to their proportion in the U.S. population. (Figure 1) A sizable shortfall in minority health professionals — the focus of this report — remains.

Aside from increasing minorities' career opportunities, another primary objective motivating efforts to train more minorities in the health professions has been to increase access to health services for underserved minority populations. Many experts have believed that minority health care providers would tend to serve minority clients, a belief that has proved correct. Though progress has been made, the problem of access to care is far from solved: many blacks and Hispanics still have serious difficulty obtaining health services. The result for many is poor health.

The continued shortage of minority representation in the health professions and a persistent gap in health status and access to care among the nation's blacks, Hispanics, and native Americans have precipitated a reassessment of programs and strategies of the past 20 years that have tried to help talented minority students attain their health careers goals. This reexamination is assisted by several major retrospective studies of program effectiveness and minority students' career paths and by growing documentation of similar efforts in other professions — notably law and engineering.

We now know that:

- Minority students who participate in high school or college science and math enrichment programs are more likely to be accepted into medical school than non-participants; yet, a great many potential applicants — especially Hispanics — do not have the experience of such programs.
- College-level enrichment programs that have proved particularly valuable in improving medical school acceptance rates are educational interventions that provide a summer laboratory experience.
- Too few black high school and college students take advanced science and math courses. Math and science skills directly affect performance on the standardized tests that are gatekeepers to higher education. Intervention programs (MCAT preparation) can improve standardized test scores.
- College may be too late to improve the academic skills and knowledge of science and math for some promising students. Therefore, interventions that begin in high school — and even junior high — also are beneficial.
- Minority students who apply to five or more medical schools and who receive help with the application process are more likely to be accepted than those who don't, as are those who come from under-

This Special Report was prepared from reports of Foundation grantees, interviews with experts in the fields of medical education and minority affairs, and the published literature.

1. In this report, the term "minority" refers to Blacks, native Americans, Mexican Americans, and mainland Puerto Ricans. These groups are the "underrepresented minorities" in the medical profession. The term "majority" refers to the white, non-Hispanic population; the term "white" includes Hispanics. Every effort has been made to keep these distinctions clear. Separate data for Hispanics are not available from some sources cited.

graduate colleges with rigorous admissions criteria.

- Although successful minority applicants generally come from families that are better off (and slightly better educated) than families of unsuccessful applicants, minority applicants are three times more likely to come from families with annual incomes under $15,000 than are their majority counterparts. Therefore, the high cost of medical school education and the shrinking availability of financial aid may be critical factors constraining the size of the minority applicant pool.
- Other non-academic factors such as poor guidance counseling and insufficient career information contribute greatly to the loss of minorities from the pool of potential medical students.
- Having minority physicians as role models and mentors is a key to minority medical students' successful professional attainment; yet there are few minority faculty in majority medical schools to recruit and inspire the next generation.
- Historically black medical colleges continue to train many minority physicians — awarding about 20 percent of all M.D. degrees granted to blacks in this country.

Based on what we now know about the various educational interventions that have shown the most success, what are the obstacles to their deployment? What is the outlook for enrolling and retaining more minorities in medical education?

Examination of these questions takes place in a health care sector and an economic and public policy climate that has changed dramatically since the 1960's. Perhaps the most important policy shifts have occurred within the federal government — the principal supporter of the expansion in health careers training and minority assistance programs at their peak. The government has moved away from the era of expanding social programs for minority groups and is no longer fostering an expansion in the training of health professionals.

This change places a larger responsibility on the private sector to design more effective programs for increasing the entry and retention of minorities in health careers. New initiatives must focus tightly on proved interventions, committed institutions, and the careful selection of students.

Background

The road to a medical degree is long: it begins with a home environment and social structures highly supportive of learning; it is built on early skills in reading and math; in junior high and high school, it adds on problem-solving abilities as well as knowledge and interest in the sciences, while careful counseling regarding medicine as a career points the direction; in college, further progress depends on a student's commitment to at least seven years' postgraduate training, an increase in science and math knowledge, and the acquisition of laboratory experience; finally, in medical school, demanding courses must be negotiated and financial assistance may be necessary, while role models, mentors, and peers provide motivation and support during the last miles.

Enrichment programs with the relatively narrow goal of increasing the number of minority physicians usually focus on the latter end of this continuum; programs with the broader goal of increasing minorities' chances for careers in the sciences may focus in the middle; programs with the broadest goal of improving the overall educational status of minorities may begin at the beginning. There are interventions appropriate to each section of the road and, ideally, some help available in every one.

During the past 20 years, many public and private programs have attempted to enrich the minority student's high school, college, or medical school experience in ways thought to be helpful academically or personally. Academically oriented programs, for example, offer special summer courses in the sciences; personally oriented programs may provide counselors, study and test-taking skills, and help with the applications process. Many programs do both.

The principal goals of these enrichment programs, in summary, have been to increase educational and career opportunities for talented minority students and to open access to health care for disadvantaged populations. Other goals — such as enabling minorities to enter the economic mainstream or drawing people from diverse segments of society into positions of academic leadership — less directly motivated many such programs.

1960's to the Mid-1970's: An Era of Expanding Opportunities

Between the end of World War II and the mid-1960's, blacks made up about two percent of first-year students in U.S. medical schools. (The great majority of them received their medical training at Howard University and Meharry Medical College, where

The Health Status of Minorities

A 1985 federal report underscored the "continuing disparity in the burden of death and illness experienced by black and other minority Americans, as compared with our nation's population as a whole."[2] These differences are attributable largely to a poorer socioeconomic environment, one aspect of which is inadequate resources for health care. Significant health inequities were noted:

- While tremendous strides have been made in improving the health and longevity of all Americans, life expectancy at birth for black males is almost seven years shorter than for white males; for black females it is approximately five years shorter than for white females.
- This shorter lifespan is partially attributable to blacks' higher death rates for all the major killers — heart disease, stroke, and some cancers. While these diseases have multiple causes, survival may be greatly improved by early detection and treatment (as in some cancers) and by ongoing, regular medical care (as in hypertension and diabetes, two major risk factors for heart disease and stroke).
- Infant mortality for blacks continues to be nearly twice that of whites, in part due to inadequate prenatal care and family planning, whereas early, high-quality prenatal care can reduce infant mortality, especially among groups at highest risk.
- Low income and lack of health insurance are among the most serious barriers to seeking health care. Minorities are disproportionately represented among the impoverished and the uninsured.

The nation's black and Hispanic populations are growing relatively rapidly. In 1985 blacks numbered 29.1 million, up from 22.8 million in 1970. Hispanics numbered 9.1 million in 1970 and 17.3 million in 1985. Middle-range projections from the Bureau of the Census suggest that, by the year 2000, the U.S. population will include 35.8 million blacks and 25.2 million Hispanics.

Many of the efforts mounted during the 1960's and 1970's to enlarge the representation of minorities in the health professions were motivated by a desire to improve access to health care — and ultimately, the health status — of underserved minority populations, based on the assumption that minority health personnel would be more likely to serve minority patients and the poor. This goal also prompted many medical schools to channel minority students into primary care specialties.

A 1985 study bore out the underlying assumption.[3] This analysis showed that a large proportion of minority graduates from the class of 1975 chose primary care specialties, practice in federal health manpower shortage areas, and have more than the average number of Medicaid recipients among their patients. In addition, they serve disproportionately more patients of their own racial or ethnic community. The minority enrichment program of the University of Medicine and Dentistry of New Jersey offers further evidence in this regard. In a survey of 44 graduates who had completed residency training, three-fourths practice in the heavily minority Newark, East Orange, and Jersey City areas.

Says David Satcher, "Blacks have no 'obligation' to serve the poor, but they identify with this group and share a unique history. It is experience, not pressure, that gives them the orientation to serve the underserved."

medical programs were founded in 1868 and 1876, respectively.) Underrepresented Hispanic groups — Mexican-Americans and mainland Puerto Ricans — and native Americans constituted even smaller proportions of medical school entrants.

Before 1963, federal support for the education of health personnel was scant. In response to predictions of severe shortages of health professionals, Congress enacted the Health Professions Educational Assistance Act of 1963. Funds were provided for construction of new schools and for low-interest loans to medical students. In 1965, the federal government added

2. US. Department of Health and Human Services, Secretary's Task Force. *Black and Minority Health, Volume I: Executive Summary*. Washington: US Government Printing Office, August 1985.

3. Keith S, Bell R, Swanson A and Williams A. Effects of Affirmative Action in Medical Schools. *New England Journal of Medicine 313*(December 12):1519-1525, 1985.

capitation grants to medical schools that increased class size. Although these programs contributed to significant increases in the total number of health professions students, minorities remained underrepresented.

The passage of the Civil Rights Act of 1964 and the advent of Medicare and Medicaid in 1966, with their requirements for integrated patient services and facilities, brought a close to legally sanctioned racial segregation in health care and higher education. But, further action appeared necessary to make the demographic composition of the medical school student body more closely resemble that of the nation as a whole.

The result was a number of programs launched by the public and private sectors, which were designed to institute more aggressive minority recruitment, selection, admissions, and enrollment policies, and to motivate and assist minority students in preparing for and successfully completing medical school.

Among the early private efforts was the Josiah Macy, Jr., Foundation's Minorities in Medicine Program, begun in 1966, which has helped establish offices of minority affairs in more than half of U.S. medical schools, among many other activities. (For many years before that, a number of national foundations — notably, the Rockefeller Brothers Fund, the Carnegie Corporation, the Ford Foundation, the Danforth Foundation, and the Sloan Foundation — had made substantial commitments to strengthening black educational institutions, encouraging black professional education, and supporting the United Negro College Fund.)

National Medical Fellowships, Inc., a private, nationwide organization established in 1946, served as a conduit for foundation monies, providing scholarships to needy black, Hispanic, and native American medical students.

The U.S. Office of Economic Opportunity (OEO) became a major funding source for minority programs at more than 50 colleges and professional schools. The Association of American Medical Colleges (AAMC) administered and monitored these programs, which were the predecessors of the federal Health Careers Opportunity Program. Also with OEO funding, the AAMC established its Office of Minority Affairs and Medical Minority Applicant Registry.

Beginning in 1972, the Health Careers Opportunity Program made grants to many health professions schools, undergraduate institutions, professional associations, and community organizations to further the participation of minorities in the medical field. (Today, 8,000 students participate annually in these federally funded programs.)

The AAMC became a prime mover in these endeavors. In 1970, an AAMC Task Force on Minority Student Opportunities in Medicine defined the short-term goal of achieving "equality of opportunity by reducing or eliminating inequitable barriers and constraints to access" to the medical profession.[4] The Task Force recommended that U.S. medical schools "increase representation of minorities in the M.D. degree program to 12 percent of total enrollment by 1975–1976." This goal was later interpreted to mean 12 percent blacks and 16 percent minorities in the entering class of 1975.

The AAMC effort gained immediate support from the American Medical Association, the National Medical Association, which had its own active programs to assist potential black physicians, the American Hospital Association, and several major private foundations.

Scholarships, financial aid, and other special programs to recruit and retain minority students in health careers reached their zenith in the mid-1970's — coinciding with an escalation of majority students' interests in medicine and an enormous expansion in medical school enrollment.[5] Such growth was made possible in part by the opening, between 1964 and 1974, of 25 new medical schools. In the early 1970's, Atlanta's prestigious Morehouse College began planning for a new medical school. The Morehouse School of Medicine is now independent and admitted its first class in 1978, making it the third four-year minority medical school within the continental United States.

The composition of the burgeoning medical student body — which grew from an average of 33,000 students per year in the 1960's to almost 56,000 students by the 1975-76 school year (surpassing 67,000 a decade later) — also shifted from one that was almost exclusively white, male, and relatively affluent to a more varied mix that included substantial numbers of minorities, women, and students from low-income families.

Advances in black admissions rates and enrollment were almost entirely the result of increased minority enrollment in majority schools. In 1970-71, historically black medical colleges graduated 66 percent of black medical students; a decade later, they graduated only 22 percent of the total.

Mid-1970's to Today: Loss of Momentum

The rapid expansion of medical school enrollment from the mid-1960's to the mid-1970's provided a unique opportunity to increase the proportion of black and Hispanic medical students without reducing total enrollment for majority students.

4. Association of American Medical Colleges Task Force. *Report to the Inter-Association Committee on Expanding Educational Opportunities in Medicine for Blacks and Other Minority Students*. Washington: AAMC; April 22, 1970.

5. Blackwell J. *Mainstreaming Outsiders*. Bayside, NY: General Hall, Inc.; 1981.

The momentum in the nation's efforts to increase ethnic diversity among its doctors-in-training peaked at 10 percent in 1975 and since has slowed. The goal of parity set by the AAMC has never been reached.

Several important factors contributed to this leveling of progress. The landmark U.S. Supreme Court cases of *deFunis* v. *Odegaard* (1974) and *The Regents of the University of California* v. *Bakke* (1978) reportedly dampened some medical schools' interest in affirmative action.[6]

In the late 1970's, barely a decade after forecasters had warned of a coming doctor shortage, the federal government's Graduate Medical Education National Advisory Committee, or GMENAC, began predicting a physician oversupply — the result of too many medical students in the education pipeline. This troubling finding overshadowed the committee's recommendation for instituting "programs which will increase the participation and visibility . . . of women and underrepresented minorities."[7]

The GMENAC predictions spurred a shift in policy toward diminished federal assistance for medical schools and direct student aid. Instead, increased emphasis was placed on programs such as the National Health Service Corps, which, in return for service, has provided training support for disadvantaged minority and majority students alike.

Meanwhile, the incendiary rise in medical care costs — fueled, some experts think, by the physician oversupply — dominated health policy debates and eclipsed concerns about access to health care.

Shifts in medical schools' outlook toward students who might need extra assistance occurred, too, during this period, because of the escalating resources required to train each student — above and beyond costs covered by tuition — and the overall rise in test scores of medical school applicants, minority and majority.

In this dynamic environment, potential medical students have changed as well. Some see that physicians no longer command the venerable, independent position that they once did and that, increasingly, medical school graduates work in salaried posts. As tuition and debt-levels have ballooned, as specialty training periods have lengthened, and as prospects for very high incomes have declined, the opportunity costs of medical education have risen. At least some talented minority students consider these costs too high, and they have sought other career opportunities.

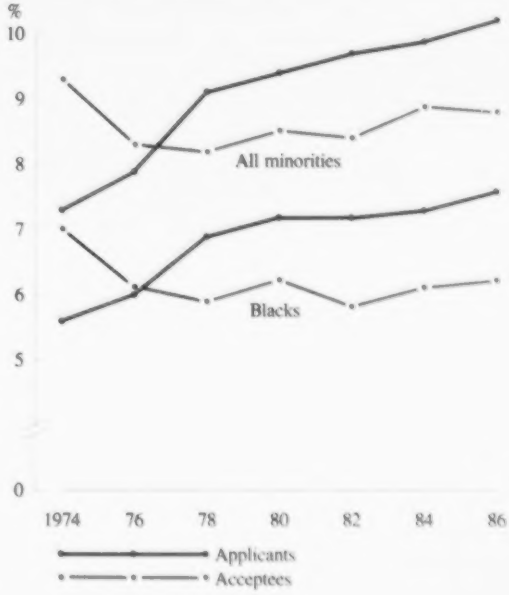
"Medical schools now have to compete with other professions for talented blacks. Large debts and the long period of training associated with a medical education make other career paths more attractive," says David Satcher, president of Meharry Medical College.

In the last decade, growth has stopped in the proportion of all minorities among the first-year enrollment of medical schools. From a peak of 7.5 percent in 1975, the proportion of blacks among first-year students dropped to 6.8 percent in 1984–85.[8] Underrepresented Hispanics, who constitute a small number of medical school enrollees, continue to show slow but steady increases in first-year enrollment.

Applicant-to-acceptance ratios are a critical measure of the potential for increasing the enrollment of specific population groups. Between 1974 and 1986, overall applications to medical school declined 27 percent. During that period, the proportion of minority applicants rose from 7.3 to 10.2 percent of all applicants. (Figure 2) Yet, during the past twelve years, the acceptance rate for minorities, especially for blacks, declined. Black acceptances declined from 43 to 40 percent, stayed at that level, and jumped back to 43 percent only in 1986. At the same time, the acceptance rate for majority students rose from 35 to 55 percent.

The significant enrollment gains made between 1970 and 1974 occurred in part because the pro-

Figure 2
Trends in the Proportion of Black and Minority Medical School Applicants and Acceptees



SOURCES: Office of Minority Affairs. *Minority Students in Medical Education: Facts and Figures II.* Washington: Association of American Medical Colleges, March 1985, other published data from the AAMC (1986).

6. In the *Bakke* case, the US Supreme Court declared "set-aside" programs for minority students unconstitutional. The Court did support, however, the consideration of race or ethnicity in college and professional schools' admissions decisions.

7. Graduate Medical Education National Advisory Committee. Report to the US Secretary, Department of Health and Human Services. Volume V. DHHS Pub. No. (HRA) 81-655. Washington: US Government Printing Office, 1980, p. 41.

8. Office of Minority Affairs. *Minority Students in Medical Education: Facts and Figures II.* Washington: Association of American Medical Colleges, March 1985. Most data in this report pertaining to applications, admissions, and enrollment of minorities and women, to minority faculty, and to historically black schools are from this and other AAMC sources.

David Satcher, president of Meharry Medical College, believes that the historically black medical schools have created important ripples throughout the medical education establishment. "I would bet," he says, "that almost every successful black that ends up in a Harvard or a Stanford had the benefit at some time along his or her educational pathway of a mentor or role model who trained at an historically black institution."

Role of Historically Black Colleges and Medical Schools

Predominantly black colleges have played a critical role in the training of minority undergraduates and professionals alike. Historically black institutions continue to award about 30 percent of the undergraduate degrees and 20 percent of the M.D. degrees granted to blacks in this country.

According to David Satcher, the special role of black schools is that "they target the problems that are unique to black people. Their students are trained to serve this community. Other schools address these issues also, but not as their major focus. Even in an integrated society you need historically black schools, in order to maintain this kind of pluralism."

In the ETS study of medical school applicants, 39 percent of those from historically black colleges were accepted, compared to 53 percent of applicants who attended majority institutions. These researchers believe that historically black undergraduate colleges "provide an atmosphere that is more likely to encourage students to stay in the science disciplines . . . (but some) do not have undergraduate science departments that can provide the students with the kinds of educational experiences that might make them competitive for admission to medical school. If we are to increase the Black medical school acceptance pool in the short term, this double bind must be addressed."

Howard, Meharry, and Morehouse are four-year medical schools; the Charles R. Drew Postgraduate School of Medicine provides two years of clinical training for minority students who have completed their first two years of basic science coursework at UCLA. These schools retain and graduate black students at approximately the same rate as do majority medical schools.

While the portion of blacks attending these institutions dwindled as opportunities expanded in majority schools, a century-old tradition of "separate but equal" education had virtually excluded blacks from all other medical colleges until the mid-1960's. As recently as 1967, approximately 83 percent of the 6,000 black physicians then practicing had trained at Howard or Meharry.

portion of minorities in medical school entering classes actually exceeded the proportion in the applicant pool, because of the special efforts made to admit qualified minorities.

A recent study concludes that today's lower acceptance rates for minorities and the declining proportion of minority students in the entering classes of U.S. medical schools cannot be attributed simply to lower qualifications.[9] Although minority students' test scores remain below those of majority students, minority students improved their scores on the Medical College Admissions Test (MCAT) at a higher rate than did majority students between 1977 and 1983. If minority students were admitted to medical school according to the same quantitative criteria applied in the mid-1970's, with today's higher MCAT scores, admissions could increase markedly.

Instead, admission rates have declined, even among minority students with the highest MCAT scores. The acceptance rate for black applicants with an MCAT score of 8 or higher fell 1.5 percent between 1979 and 1983, whereas the acceptance rate for majority applicants with comparable scores rose 2.9 percent. The authors conclude that "the commitment of medical schools to affirmative action has slackened."

Current Trends

One of the most notable changes in the population graduating from health professions schools (other than nursing) is the increasing proportion of women in traditionally male fields. In the 1986-87 medical school entering class, women composed one-third of the total, up from 11 percent in 1970.

For minorities, this trend is even sharper: if current trends continue, by 1989 there will be an equal number of black men and women entering medical school and more black women than men in schools of pharmacy. The proportion of Hispanic women in the health professions is rising also, but not as rapidly.

Data suggest that the next decade will see slow increases in the total number of minority physicians. These practitioners will continue to make up a disproportionately small share of this workforce, compared to their majority colleagues and their representation in the U.S. population.

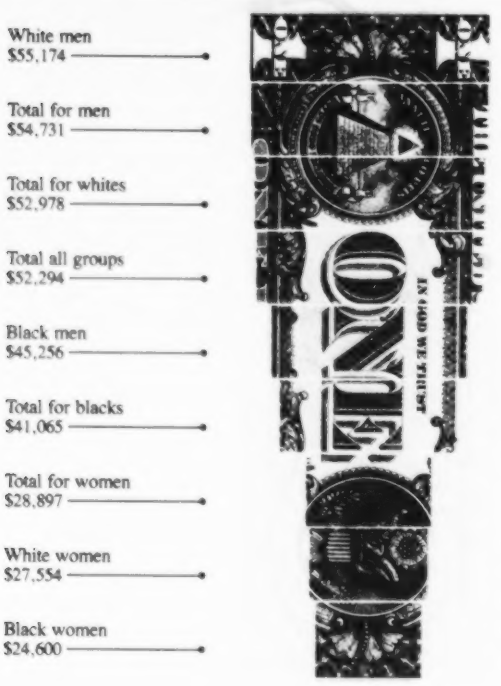
Minority Professional Employment

The 1970's marked a decade of opportunity for unprecedented numbers of blacks who entered professional ranks. The proportion of black men in professional occupations rose from 6 to 8 percent and, of black women, from 11 to 14 percent.[10] Despite these

9. Shea S and Fullilove M. Entry of Black and Other Minority Students into U.S. Medical Schools. *New England Journal of Medicine* 318(October 6): 654-660, 1988.

10. Hill R. The Black Middle Class: Its Growth and Future. pp. 23 and 30. In *The State of Black America 1986*. Washington: National Urban League, Inc., 1986.

Figure 3
Annual Income of People in the Health-Diagnosing Professions



NOTES: The "health-diagnosing professions" category includes physicians (primarily), dentists, veterinarians, optometrists, and podiatrists. The "total for women" exceeds the income levels of the two population groups shown because of the higher incomes earned by Asian and Hispanic women who are not from underrepresented minority groups.

SOURCE: U.S., Bureau of the Census. *Earnings by Occupation and Education*. Washington, May 1984.

important advances, much smaller proportions of blacks than whites are in higher-level occupations: more than half of all white male workers were in professional, managerial, or craft jobs in 1980, compared to less than one-third of black men, one-fourth of white women, and one-fifth of black women.

Major U.S. corporations "have not made even a dent in moving minorities into the senior ranks," concludes a recent *Harvard Business Review* article, citing two surveys of *Fortune* "1000" companies conducted by the recruiting firm of Korn Ferry International.[11] In the firm's 1979 survey of 1,708 senior executives, three were black, two Asian, and two Hispanic; in the 1985 survey of 1,362 senior executives, four were black, six Asian, and three Hispanic.

Moreover, even minority professionals are concentrated in the lower-paying ranks. Black and Hispanic engineers and scientists, for example, earn average salaries that are 12 to 13 percent below those of their majority colleagues.[12] Similar income figures are unavailable for lawyers, but a 1984 survey revealed that blacks and Hispanics make up less than two percent of the lawyers working in 92 of the 100 largest U.S. law firms.[13]

In the health professions, similar patterns hold, though very limited income data are available by race. 1980 Census data show that the mean income of blacks in the "health-diagnosing professions" (doctors, dentists, veterinarians, optometrists, and podiatrists) is considerably less than that of non-Hispanic whites. (Figure 3) These differences reflect practice location and the choice of specialty of black physicians, which is heavily weighted toward the lower-paying primary care specialties; they reflect the much lower income for women practitioners, who may be recent graduates or work part-time and who make up a larger proportion of the black than the non-Hispanic white group; and they reflect black physicians' greater likelihood — at least in the past — of entering a salaried practice.

The true black-white income differential for physicians may be greater than indicated in Figure 3, which combines data from several professions. Census data collapse income figures in the highest categories, and many physicians have incorporated in order to shelter portions of their income. To the extent that non-Hispanic white physicians are overrepresented in the highest income and incorporated groups, their income is understated.

Challenge for the 1990's: Increasing the Qualifications and Size of the Applicant Pool

Because in recent years minority medical admissions have leveled off, more attention is being paid to the characteristics of the minority applicant pool — its qualifications and size. Some of the measures that have been found helpful in enriching this pool, described in subsequent sections, are: improving academic skills and MCAT scores, careful identification of students who are potential physicians, providing role models and mentors, and providing financial assistance. *continued on page 15*

11. Jones E., Jr. Black managers: the dream deferred. *Harvard Business Review* 86(May-June):84-93, 1986.

12. U.S. National Science Foundation. *Women and Minorities in Science and Engineering*. NSF 86-301, January 1986.

13. Stille A. Little Room at the Top for Blacks, Hispanics. *National Law Journal* 8(December 23):1, 1985.

Minority Medical Training Programs of The Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation has been involved in efforts to increase the supply of minority health personnel, particularly physicians, since its earliest days as a national philanthropy. During the past 14 years, this commitment has resulted in grants totaling $48.7 million.

- $2.5 million in grants to educational programs for minority high school students;
- $10.9 million in grants to educational programs for minority college students;
- $17.6 million in financial aid for minority students (including grants to National Medical Fellowships, Inc.);
- $3.8 million in support of the Foundation's Minority Medical Faculty Development Program; and
- $13.9 million to augment the clinical faculty and strengthen the management of Meharry Medical College.

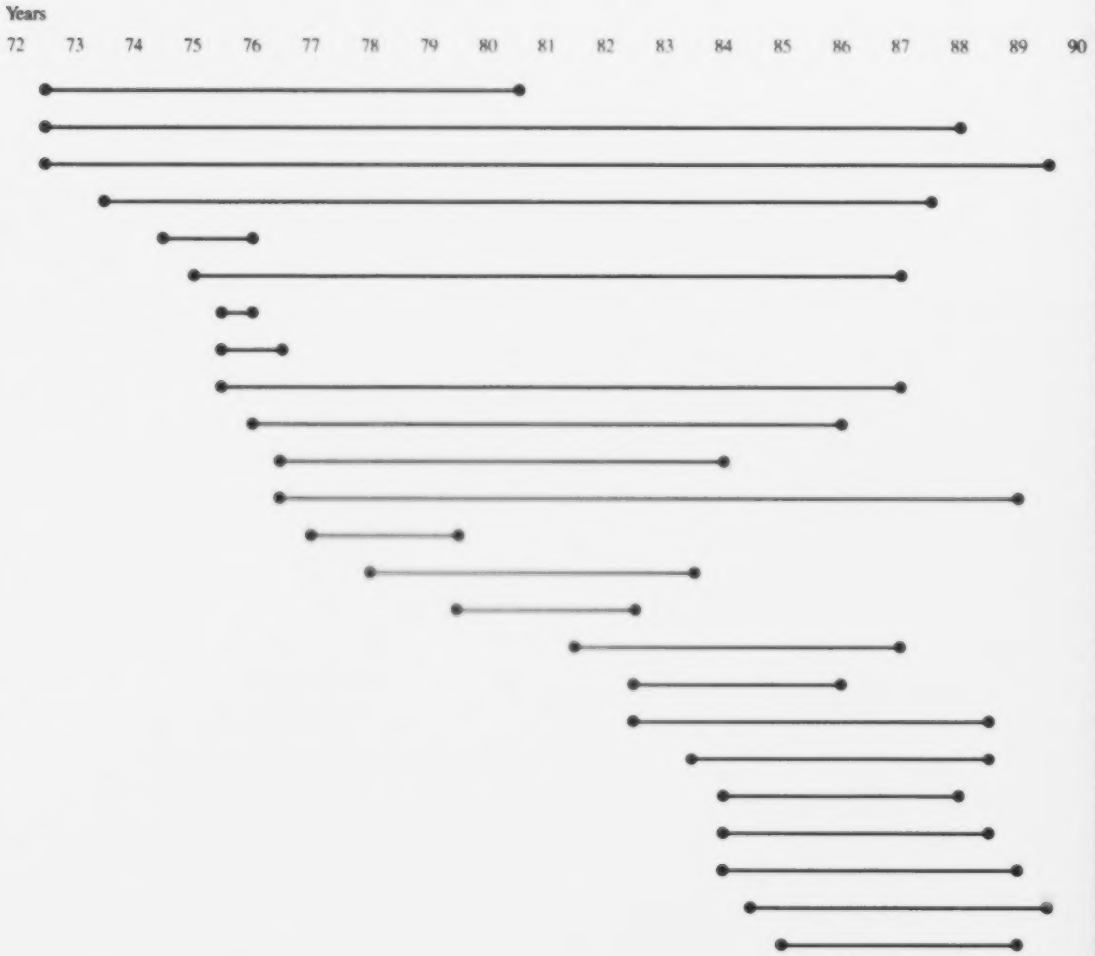
In addition, the Foundation has awarded almost $1.1 million in grants for studies of the status of minorities in medicine and of the effectiveness of various types of intervention programs, in order to strengthen programmatic decisions in this area.

More than 20,200 students have participated in the educational programs for high school and college students and the National Medical Fellowships program under Foundation support. (Figure 4)

Over time, The Robert Wood Johnson Foundation, like many other groups actively supporting minority physician training programs, came to recognize that efforts aimed exclusively at improving the skills of college-level minority students were sometimes too little, too late. These realizations led the Foundation to add programs that identified promising students earlier in their academic careers — in high school, rather than college — provided them with intensive math and science experiences, and made a greater effort to offer them adequate counseling and assistance in goal-setting.

Within the past decade, the philosophical underpinning of minority enrichment programs also has evolved. In the earlier days, there was more of an "open admissions" approach, with project directors accepting virtually any minority student who was

Figure 4
Minority Medical Training Programs of The Robert Wood Johnson Foundation



interested. As a result, a number of the programs had high drop-out rates, and students whose talent and interest in medical careers was not sufficiently high evaporated quickly from the pool, as medical school tuitions rose and scholarship and fellowship opportunities diminished. Foundation-supported projects are now highly competitive, and candidates are screened carefully to assess their commitment to a medical career.

In recent years, the Foundation has sought to increase the number of minority faculty in majority schools. A national program, the Minority Medical Faculty Development Program, was launched to identify promising young minority physicians interested in pursuing research careers. So far, 32 fellowships have been awarded under this program. The principal goal of the program is to help young minority physicians who want to have academic research careers achieve their objective by completing postdoctoral fellowships in the laboratories of eminent biomedical scientists. Program advisors also hoped that some of these young faculty might become role models and mentors for others.

Some of what the Foundation learned during these

Group served:
High school programs
College programs
Medical school & postdoctoral programs
Summer academic program
Laboratory experience
Science & math coursework
Other academic skills development
MCAT preparation
Financial aid
Counseling
Mentoring
Parental involvement
Blacks
Hispanics
Native Americans
Appalachian whites
A Student Aid Programs (various schools)
B Meharry Medical College
C University of Medicine and Dentistry of New Jersey
D National Medical Fellowships, Inc.
E Harvard Medical School
F Tulane University School of Medicine
G University of North Carolina at Chapel Hill School of Medicine
H Cornell University Medical College
I Aspira of America, Inc.
J National Fund for Medical Education
K University of Mississippi School of Medicine
L Morehouse School of Medicine
M University of Texas Medical School at Galveston
N University of Southern California School of Medicine
O Jackson State University
P Chicano Health Policy Development, Inc.
Q Charles R. Drew Postgraduate Medical School
R Illinois Institute of Technology
S Baylor College of Medicine
T Boston University School of Medicine
U Minority Medical Faculty Development Program
V Bowman Gray School of Medicine of Wake Forest University
W Associated Medical Schools of New York
X University of Utah

years of commitment was acquired painfully. One such lesson is the importance of making sure that the program sponsor is truly committed to the recruitment and retention of minority students. For example, its program needs a strong director with full faculty status, and the school must put some of its own funds into the program and not rely solely on external support. The program must be well managed and carefully, but aggressively, recruit students who have a realistic chance of completing medical training and of benefiting from the intervention program. Program elements that are vital are financial aid, strong counseling and peer support, improving students' study and test-taking skills, providing summer programs and laboratory experiences, and, of course, strengthening math and science training.

A number of other foundations, with broader program interests, have undertaken programs to improve the general quality of education — especially science and math education — in the public schools. These efforts are extremely important, but have not been attempted by The Robert Wood Johnson Foundation, whose focus is on health care and health professions training.

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Improving Academic Skills

Today, achieving greater minority representation in medical and other health professions depends on improving students' overall academic performance and their ability to compete in an educational environment that places a premium on credentials and quantitative skills.

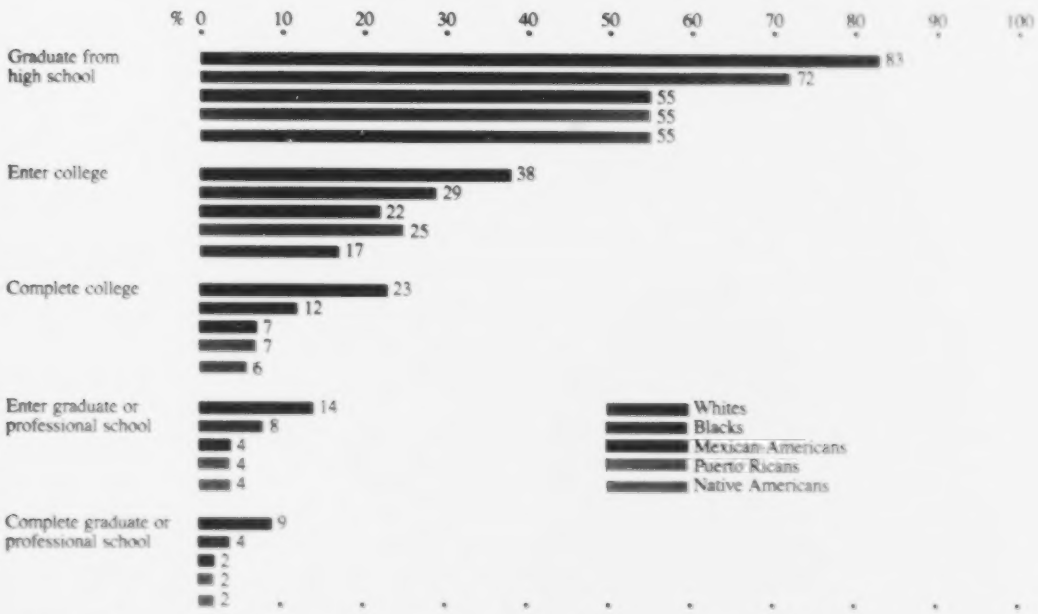
This formidable challenge, however, comes at a time when minority students are losing ground to majority students at each stage of the educational pipeline. (Figure 5) High school graduation, college attendance, college graduation — all have declined for blacks since 1975. Much of this lost ground can be attributed to a high school dropout rate for blacks that, after years of dramatic decline, is again creeping upward and today, at 30 percent, is about half again as high as that of majority students (20 percent). For Hispanics and native Americans, the dropout rate is 40 percent.[14]

While numerous recent reports have painted a discomforting view of public education in the United States, the educational environment for disadvantaged minority students presents a particularly discouraging picture.[15] Minority youngsters are more likely to attend elementary and high schools in high poverty areas characterized by low academic performance, discipline problems, low levels of parental involvement, and less qualified and motivated teachers. The cumulative impact of these factors begins to show up in lower educational achievement by black children by about age ten. Minority students are often arbitrarily placed in vocational courses or in low-track classes where they are not intellectually challenged, where expectations are low, and where they get the message that they cannot aspire to higher scholastic achievement.

According to federal statistics, 23 percent of blacks who graduated from high school in 1982 had three years of science, compared to 45 percent of Asian-Americans and 34 percent of whites (including Hispanics). In math, the comparable percentages were 39, 68, and 50, respectively. Blacks also are far less likely to take advanced college science and math courses, whereas most physicians have an educational history that includes an undergraduate concentration in one of the sciences.

Russell L. Miller, dean of the Howard University College of Medicine, says, "There are clearly no simple, single solutions. It is a long-term, expensive proposition. You have to work with the high schools; you have to engage the support of parents, teachers, and the community."

Figure 5
The Educational Pipeline in the United States (c. 1980)



SOURCE: Astin A. *Minorities in Higher Education*. San Francisco: Jossey-Bass, 1982. Cited in *Equality and Excellence: The Educational Status of Black Americans*. New York: College Entrance Examination Board, 1985.

14. Office of Minority Concerns, *Annual Minority Status Report*. Washington: American Council on Education, 1983.

15. The College Board, *Equality and Excellence: The Educational Status of Black Americans*. New York: College Entrance Examination Board, 1985.

In 1985, the Educational Testing Service (ETS) surveyed 3,234 randomly selected minority students from the 4,565 who took the Medical College Admissions Test in 1983, revealing valuable information about the existing pool and the characteristics of successful applicants.[16] Most minority applicants — 84 percent for blacks and 74 percent for Hispanics — had been in academic tracks in high school. Some 45 percent attended colleges with enrollments that were 25 percent or less minority; 27 percent of the black applicants attended historically black colleges. Two-thirds of the black applicants and 90 percent of the Hispanic applicants attended undergraduate schools of medium or high selectivity. Most were science majors, and the vast majority knew they wanted to be physicians by the time they completed high school.

In an important reflection on the value of minority enrichment programs, successful applicants were more likely to have had the benefit of one of these educational experiences. Particularly valuable were interventions that provided a summer education program with a laboratory experience. Such combined programs increased acceptances by 16 percent. Summer programs also give an opportunity for closer interaction with faculty members, advisors, and others to whom students can turn for support and recommendations for medical school.

Despite the advantage conferred by high school and college enrichment programs, the ETS study found that very few medical school applicants actually had such experiences. Less than 10 percent of minority applicants received tutoring in math and science when in high school. Yet, almost 40 percent were hospital volunteers, indicating a strong and visible early interest in health care. When in college, black medical school applicants were more likely than Hispanics to participate in special programs for students interested in health careers and to have a summer program experience.

By the time the decision to apply to medical school was made, help was more likely to be obtained: almost 60 percent of blacks and Hispanics had special preparation for the MCAT, and more than half had help with the medical school application process.

Clearly, high school and college programs other than MCAT preparation are reaching very few of the minority students who ultimately apply to medical school, "the vast majority of (whom)," according to the ETS study, "could benefit from activities designed to strengthen their academic competitiveness and their performance on the MCAT."

Medical school-based programs — tutoring, peer support, and counseling — also can have value, because once accepted, minority students have greater difficulty staying in medical school than do majority students. Each year from 10 to 15 percent of minority students in the first-year class are repeating the academic year. A study of the 1977 entering class revealed that the graduation rate for minorities was lower than that of majority students (93 versus 98 percent — still high compared to other professions), and the percent taking five or more years to graduate was much greater (16 versus 3 percent).[17]

Improving MCAT Scores

Math and science skills have a direct relation to performance on standardized tests such as the SAT (Scholastic Aptitude Test) and MCAT (Medical College Admissions Test) — the gatekeepers to higher education and medical school. For years these standardized tests have been criticized as disproportionately penalizing minorities seeking to enter higher education.[18]

Moreover, no combination of quantitative or qualitative measures has yet been shown to predict who will be "a good doctor." Undergraduate, graduate, and professional school admissions tests do not predict much other than students' first-year grade performance.

Yet, in the ETS study, MCAT scores were found to be the most important determinant of medical school admission. Students' MCAT performance usually could be predicted accurately from their scores on the SAT, taken in the last year of high school. This finding suggests that to maximize the applicant pool, interventions aimed at improving test performance should be initiated in high school or earlier.

Despite the overriding importance of the MCAT in this study, many medical schools carefully consider additional factors that predict success when reviewing minority applications. They take into account a student's individual experience that demonstrates leadership, community involvement, medical interest, and the ability to understand and deal with racism. They assess the likelihood that a student will be able to develop a network of social support. The AAMC's Simulated Minority Admissions Exercise teaches medical school admissions committee members how to evaluate these qualities.[19]

Identifying Potential Physicians

The Foundation's 15 years of experience with programs to help minority students attain health careers have clearly demonstrated the importance of carefully selecting the students who participate. Several studies show that minority students' persistence through the educational continuum is linked to early academic performance as reflected in grade point averages, academic ability as measured by standard-

ized tests, socioeconomic status, educational aspirations, and parental involvement.

A study using two large databases — the Project TALENT Data Base, comprising more than 400,000 individuals who were high school students in 1960 to 1963 and the National Longitudinal Study of the High School Class of 1972, comprising more than 12,700 students — has compared and examined the backgrounds, interests, and achievements of students who became physicians and those with similar interests and talents who did not.[20]

In this study, students were considered "potential physicians" if their academic aptitude and science interests were similar to those of students who actually became physicians. All students who applied to medical school were included, and the estimates were further adjusted, based on interview data, to reflect students' actual interest in a medical career. Using these criteria, about 7,000 black students and 107,500 non-Hispanic white students were "potential physicians" in each of the 1960–63 high school graduating classes.

Very small proportions of these students eventually applied to medical school — about 3.7 percent of the black students and 10.7 percent of the white students — indicating that a substantial portion of this "pool" is subsequently channeled elsewhere. The study's additional analysis attributes much of the enormous loss among black students to such non-academic factors as lack of funds, poor guidance counseling, and insufficient career information.

Of those minority students who applied to medical school from the 1972 cohort, 52 percent were female, more than half had parents with some college education, and they tended to be from relatively affluent backgrounds.

Other student characteristics also affect admissions rates. Controlling for MCAT performance, the ETS study found that minority students successful in being admitted to medical school were more likely to have applied to five or more schools and to have received help with the application process. Applying to more schools increases the chance that students will find a match between their qualifications and the admissions criteria of a given school.

Providing Role Models and Mentors

A widely held assumption, borne out by studies of various types of minority enrichment programs, is that role models and mentors provide valuable standards of achievement, inspire career choices, and lay out avenues for upward mobility. They are teachers, models, guides, advocates, counselors — the people who help students locate and reach out for their personal star.

Role models and mentors may be from the medical school or practicing in the student's home or college community. They help compensate for the isolation that minority students encounter in academic and professional settings where they are so greatly underrepresented, and their encouragement can help students stay in school.

Despite the potential importance of role models and mentors, a recent survey found that only one in eight black professionals had had a mentor when in graduate or professional school.[21] One reason is the paucity of minority faculty. During the 1960's and 1970's, the number of full-time minority members of medical school faculty remained virtually unchanged. In 1981, less than three percent of the 47,701 medical school faculty in the United States were underrepresented minorities, 36 percent of whom teach at minority schools.

Providing Financial Assistance

Financial aid has a great effect on staying in college, particularly for black students, who are nearly twice as likely to remain in four-year colleges if they receive such assistance.

In 1984, only 7.6 percent of majority medical school acceptees came from families with annual incomes under $15,000; for minority groups the share was three times greater. On average, minority medical students graduate with a debt of over $25,000 and 38 percent have a debt greater than $30,000. They and their families face obvious, severe financial pressure.

Unlike the situation of a decade or so ago, today the high cost of a medical education may be a critical factor constraining the size of the minority applicant pool. The simultaneous decrease in student aid programs means increasing dependence on market-rate loans. Under these conditions, even relatively small scholarships eventually save students substantial repayment costs.

Ability-to-pay is believed to contribute to all students' decisions about where to apply and even whether to attend medical school after being accepted.

Medical education costs and associated high indebtedness may also be a barrier to increasing minority populations' access to care — the secondary goal of many minority enrichment programs. A 1984 study showed that, regardless of ethnic background, students with higher debts were less likely to choose primary care specialties. In contrast, minority students with subsidized debt were more likely to choose primary care.[22] *continued on page 22*

Rudi Schmid, dean of the UCSF School of Medicine, describes his school's recruitment program. "UCSF has had a long commitment to training underrepresented minorities. Until 1985, UCSF accepted as many of the most highly qualified minority students as it could, usually enrolling 25 percent underrepresented minorities. In 1985, however, the school experienced a sharp reduction in minority enrollment. A multifaceted, high-level minority recruitment effort is under way to dramatically increase the number of underrepresented minorities entering in 1986 and double that in 1987."

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21. Blackwell J. Mentoring and Beyond: Career Development Dynamics of Black and Hispanic Professional Schools. Atlanta: Southern Education Foundation, Inc., 1985.

22. Bazzoli G. Medical Education Indebtedness: Does It Affect Physician Specialty Choice? Health Services Administration 1985.

Four Case Studies

David Rogers

Robin Corbett

Cesar Molina

Stanley Broadnax

"Until I attended the Bowman Gray School of Medicine high school program, I had been thinking about an engineering career," says David Rogers, a Duke University freshman. "Now, I'm definitely considering a medical career, although I'm currently hoping to major in biomedical engineering."

Rogers was raised in Sierra Leone, West Africa. In 1983, he and his sister and brothers came to the United States with his mother, a U.S. citizen married to a citizen of Sierra Leone. His mother teaches nutrition to high school students. Noticing Rogers's aptitude for the sciences, his high school guidance counselor encouraged him to participate in the "Medicine as a Career" summer program at the Bowman Gray School of Medicine of Wake Forest University.

"I had just come from West Africa and was having some real problems coping," he says. "My guidance counselor took it upon herself to help me adjust to American life. She also helped me choose colleges to apply to.

"My father is an engineer in the Sierra Leone Ministry of Works, so naturally I thought of engineering as a career. But my guidance counselor gave me an application for the Bowman Gray program and suggested that I try it, that it would help me decide about my future."

The Bowman Gray program spans two summers. The first year is a two-week, mostly clinical program. Students are assigned to physicians who serve as preceptors, allowing the students a first-hand glimpse of clinic work.

"You get to follow them as they do their rounds in the clinics. I had the opportunity to work with a surgeon, gerontologist, radiologist, oncologist, and pathologist, and also spent some time in the emergency room. I was fascinated by the work that doctors do, especially oncologists. I learned there's a lot more to oncology than giving chemotherapy."

Intrigued by the first year's program, Rogers opted to return to Bowman Gray for another related program the next year, an intensive five-week session called "Focus on Biology" that includes seminars on medical topics as well as science classes.

"In anatomy we studied the parts of the body from head to toe," says Rogers. "I also had more clinical experience and was assigned to work alongside a pediatrician and a general practice physician. The doctors make you feel as though you're a part of their decision-making. They explain how they're examining patients, and you learn a lot. It's a good feeling to be able to help people."

Rogers is one of approximately 100 black freshmen at Duke University. (Total class size is 1,600.) "I don't feel any racial tension and feel that I fit in well. I've made a lot of friends. Duke offers special services for minority students such as free tutoring.

"Right now, I am majoring in biology, but thinking seriously about biomedical engineering. My parents have encouraged me to get experience in

both these disciplines. But I'm definitely leaning more toward a career in medicine, probably a family medicine practice in a large, mid-Atlantic city."

Twenty-three-year-old Robin Corbett, a second-year medical student at Boston University School of Medicine, became attracted to a career in the biological sciences for a very personal reason.

"I had always enjoyed biology, and, when I was a senior in high school, my grandmother became seriously ill. As a result of that experience, I became particularly interested in the medical field.

"My mother is a high school biology teacher and was a major influence on my decision. When I was a child, she took me with her every year to the local public school science fairs where I saw many outstanding student science projects. In 1983, my mother was awarded the President's Award for Excellence in Science Teaching. My father worked for the government, and he also made me see that I needed a good education.

"My high school (Western Branch High School in Chesapeake, Virginia) was predominantly white, but my family encouraged me to enroll in Hampton University, an historically black institution. At Hampton, because the social and cultural activities are geared towards the black student, I gained a sense of identity and my independence."

Joining Hampton's Premed Club increased Corbett's exposure to medicine as a career. During one visit to a nearby medical college, club members role-played the medical school interview. She also participated in several summer enrichment programs, including one at East Carolina University in Greenville, North Carolina.

"During the summer program, I rotated through several different clinics in Pitt County Hospital, including the emergency room and obstetrics and gynecology. The doctors were very encouraging. In fact, they let me witness the birth of a child! From that point on, I was very motivated."

As a sophomore, Corbett met Dr. Arthur Culbert, associate dean at Boston University School of Medicine and director of BU's new Early Medical School Selection Program, during his recruiting visit to Hampton. She was intrigued by Culbert's emphasis on decompressing the transition from an historically black college to a predominantly white medical school and applied to the new program. During the summer, she flew to Boston for an interview and won early acceptance to medical school a few weeks later without having to take the MCAT's — one of the first two students in the BU program.

"The summer after my junior year at Hampton, I moved to Boston to participate in the first phase of the program. After a week's orientation in September, I spent my senior year at Boston University, taking biochemistry, law, medical literature, and completing the microbiology and physiology courses that were applied to my undergraduate degree at Hampton. Earning double credit for key science courses was really helpful," she says.

Looking back at the program later, Corbett believes that spending a transition year to become acquainted with Boston and the medical school environment helped. There was less pressure to concentrate on sciences and more time for courses on sociological aspects of medicine and for gearing herself to life as a medical student in a northeastern urban center.

"Going from an all-black college to a majority institution was a social transition," she says. "However, the faculty, as well as the people involved with the EMSSP, were very supportive and helpful. They kept in close contact with us to make sure that our adjustment to the campus was going smoothly."

Corbett felt confident about her academic preparation, but noted that she did have to make some adjustments. "Although I was competent in my subject matter, the toughest change involved the kinds of examinations we took at Boston. The university examination system here is different, with fewer essay-type questions and more intricate multiple-choice questions."

Corbett is looking forward to beginning her clinical clerkships in the summer. She is considering specializing in either pediatrics or obstetrics and gynecology and hopes to practice in a major southern city.

"We need more female OB/GYN's. I feel that most women can relate better to other women when they have a gynecological problem or are pregnant. In practicing medicine, you have to be sensitive to another person's feelings. Establishing good rapport and effectively communicating with your patients is one of the qualities that makes you a good physician."

As a politically aware young Puerto Rican, Cesar Molina considered both medicine and law as potential careers while attending a Jesuit high school in San Juan. During high school, he directed a student volunteer program, Hospital del Niño. The program recruited students to entertain and help care for children at a hospital in a disadvantaged neighborhood.

"I enjoyed my work with the program," he says, "and the sense that I was doing something constructive."

Molina, whose parents are college-educated professionals, decided to attend college on the mainland: "I wanted the opportunity of a more complete liberal education as well as the experience of living in the States," he explains.

He applied to and was accepted by Boston College, the nation's largest Jesuit institution of higher education. Four years later, Molina, a premed student, graduated with honors as a Scholar of the College and was accepted by the Yale University School of Medicine. A senior research paper on a topic in physiology steered him in the direction of medical research.

"Yale's unique educational system stimulates independence. It's especially geared for people who want to pursue careers in academics and research," he says.

Yet, there were pressures.

"People often assume that because you happen to be a minority, you got into the school on a quota. So, especially during the first year of medical school, I felt that I had to prove myself to other people — to prove to myself that I was as good as everyone else. After the second year, this was not a major stress."

He graduated from Yale in 1980, then served a three-year residency in internal medicine at Stanford University. Since 1984, he has worked as a cardiovascular pharmacologist at the Stanford University School of Medicine in the heart transplant program. In 1984, he became a joint cardiology and clinical pharmacology fellow and in 1985 was named a recipient of a fellowship under The Robert Wood Johnson Foundation's Minority Medical Faculty Development Program.

"I became involved in the heart transplant program around the time of the first heart-lung transplant. At that time, 50 to 60 percent of the patients died during their first year after receiving a new heart. Now, 80 percent of our patients are alive after a year, largely because the drugs now available help us manage the body's rejection of the transplanted heart."

In Molina's own research, he is testing a natural hormone produced by the heart muscle. He intends to pursue a career in academic medicine because, he says, "Academics allows me to pursue the three major aspects of medicine — research, patient care, and teaching — all of which I enjoy.

"I enjoy teaching young medical students, seeing them reflect on a medical problem, go through the thinking process, and arrive at an answer. As a teacher, you have to approach the students on their own level and bring them forward — even encourage them to surpass your level." Molina hopes ultimately to receive a faculty appointment at a major medical institution, so he can assist the largest number of young physicians, especially minorities.

"For a student to succeed, it does help to have someone to emulate. It's an advantage if this person shares similar cultural interests, because students have difficulty identifying and forming a bond with someone who's very different.

"I value the opportunity to prove myself through my research. For minorities, strengthening research skills may ultimately help us achieve faculty appointments at outstanding medical institutions."

The example provided by a black football-team physician at the University of Michigan influenced Stanley Broadnax to choose a medical career. Today, Broadnax heads the largest city health department in the State of Ohio, managing an annual budget of $24 million and a staff of 700.

"I never seriously considered a medical career as a youth growing up in an inner-city Cincinnati neighborhood," he says. "My first influences were my elementary school teachers. They spoke well, dressed well, and seemed to be happy. At an early age, I realized that if I wanted to grow up to be like them, I would have to go to college."

The son of hard-working, religious parents, Broadnax became the first in his family (he has five siblings) to earn a college degree. For him, as for many other talented minorities growing up in the 1960's, sports provided the key to a better life.

"Several of my coaches and my high school counselor, recognizing that I was a serious student — I was an honor roll student in junior and senior high school — stressed the importance of higher

education and told me that, if I continued to be diligent in applying myself to sports and studies, sports could provide me with educational opportunities at an outstanding university."

Throughout high school, Broadnax considered many professional careers and was interested in health; however, he didn't believe that medicine was an option for minorities.

"I didn't see many black physicians in the neighborhood public health clinics," he says. Nevertheless, after helping out in the practice of a black dentist, he entered the University of Michigan as a premed, predentistry major.

While playing football his freshman year, Broadnax developed a friendship with a white pathologist from the University of Michigan Hospital, a volunteer assistant team physician.

"He took the time after practice to talk with me, to answer my questions about medicine and medical careers. Through our conversations, it became clear that medicine *was* an attainable career."

The pathologist helped him obtain a summer position in the pathology laboratory at the hospital, where he came to feel as much a part of the medical team as he did on the football field earning All Big Ten football honors.

After an outstanding academic and athletic career, Broadnax became one of 20 minority students in a class of 200 accepted by the University of Michigan School of Medicine in the early 1970's. While in medical school, Broadnax received some scholarship assistance from The Robert Wood Johnson Foundation's Student Aid Program.

Broadnax decided that internal medicine and public health would be his two areas of focus: "Looking at the health care field, I saw few minorities from disadvantaged backgrounds participating in the development of public policies related to health care. Because I grew up in an inner-city neighborhood, I thought I could bring a unique perspective to the practice of medicine and the development of public policy."

Broadnax received his medical degree in 1974 and two years later, his Master's Degree in Public Health in health care organization and administration. He then returned to Cincinnati to do his internal medicine residency at Christ Hospital. While there, he was asked to serve on the board of directors of West End Health Center, a private, nonprofit community health center less than a block from the public housing project where he grew up. That appointment led to his being named medical director; later, he added the responsibility of administrative director of health services, which brought him into contact with the health department. Four years later, he was recruited for the commissioner's post, the first black — as well as the first native Cincinnatian — to hold that position.

"After being exposed to community organizing and strategizing while at the West End Health Center, I decided that I wanted to combine the experiences of a physician with those of a health care administrator and organizational specialist and be in a position to influence public policy at the municipal, state, and federal levels." Broadnax is now president of the U.S. Conference of City Health Officers.

In his eight years as health commissioner, Broadnax has improved the finances of the health department by increasing revenues generated by neighborhood health centers, by successful grant applications, and by the creation of the city's own health maintenance organization.

"I had more of a personal stake in succeeding in this job than did previous commissioners. My family and friends — people I grew up with — depend on the services that we provide."

Despite his very demanding post, Broadnax volunteers as a team physician for numerous neighborhood athletic teams, including those of his former high school and various community center boxing and wrestling programs.

"Helping people make their lives better is an important concern of mine. I hope I'm not only providing a medical service, but also a social and human service as a role model, because it's important for young people from disadvantaged backgrounds to come into direct contact with professionals from similar backgrounds.

"Talking with them, laughing and joking with them, shows that you can be professional, you can achieve, and you also are human, just like them. With the same opportunities and the same special motivation, they can attain it, too."

Conclusion

Past strategies for enhancing the involvement of underrepresented minorities in the health professions are being rethought in light of a vastly changed economic and social policy environment and increased information about which strategies work.

The studies of minority students who were successful medical school applicants did not produce startling findings, but they clearly illustrate the persistence of a major national problem. While many people remain concerned about equity in access to higher education and about the desirability of increasing the number of minorities in the health professions, any agenda for doing so must recognize these attitudinal shifts, today's keener competition and higher costs, and new perceptions among college students about the relative value of pursuing a career in medicine.

For talented minority students whose vocation is the healing arts, the opportunities to enter these fields are smaller than they were a decade ago. In part, this is because the lessons of 20 years of efforts to enrich the educational experience of disadvantaged groups are not being fully applied. We now know enough about programs to attract and assist talented minority students toward health careers that would enable the design and implementation of programs with a high likelihood of success. If the gap between the potential and the actual participation of minorities in medicine is not bridged, it will be because as a nation we have held the blueprint, yet not constructed the span.

Minorities in Other Professions: Law and Engineering

Professional careers for minorities were limited largely to education, the ministry, nursing, and home economics until the 1960's, when options blossomed, choices began to change, and the number of minorities entering graduate and professional schools increased dramatically. Two professions in addition to medicine where minorities charted significant gains were law and engineering, though, as in medicine, progress has leveled off.

Minority law school graduates doubled between 1965 and 1980, though, again as in medicine, this was a period of even greater increase in majority enrollment. While blacks made up only 4.3 percent of law school graduates, half of all professional degrees awarded blacks during this period were in law.

The success in enhancing minority participation in the legal profession largely results from work of the Law School Admission Council, an association of U.S. and Canadian law schools founded nearly 40 years ago to improve the law school admission process and provide services to legal education and the legal profession.

Another important contribution has been made by the Council on Legal Opportunity — roughly analogous to the National Medical Fellowships, Inc. — formed in 1968 to assist students from economically and educationally disadvantaged backgrounds who wish to become attorneys. The Council provides fellowships and regional, six-week summer institutes for an average of 200 entering (mostly minority) law students annually — slightly less than five percent of all minority first-year students.

Minority law students currently have a first-year attrition rate for all reasons — financial, academic, and personal — of about 11 percent, which drops thereafter to less than five percent, quite close to the national norm.

Law students, like medical students, may have trouble finding role models and mentors: less than six percent of full-time law teachers are minorities, and a fifth of these teach at the four historically black law schools. One-third of ABA-accredited law schools have no full-time minority faculty.

Total minority enrollment in engineering schools climbed steadily during the 1970's, resulting in a 600 percent increase in minority engineers between 1970 and 1980. At the higher levels of the profession, however, there are still few minority representatives: blacks make up less than one percent of doctoral-level engineers.

The rapid growth of the 1960's and 1970's is attributable largely to corporation support, driven by the overall shortages of engineers and a desire to increase minority representation in the profession, and to new federal and state regulations that mandated a larger minority presence on government projects.

Major new funding, primarily from corporations and private foundations, helped historically black colleges of engineering strengthen their programs. New dual-degree programs permitted students enrolled in black colleges to take their liberal arts and pre-engineering courses at their parent school, then complete the last two years of engineering training at a cooperating majority institution. Effective outreach, recruitment, mentoring, and academic assistance programs were launched. During this period almost half of the nation's 282 schools of engineering were actively recruiting minority students.

The National Action Council for Minorities in Engineering, Inc. (NACME) has spearheaded these efforts since 1973. The group annually provides some three million dollars in financial aid to almost 4,000 students at 145 participating colleges and universities. A summer program gives promising minority students the opportunity to gain practical engineering experience and an introduction to corporations with a demonstrated commitment to the minority engineering effort.

NACME's 1984-85 chairman, Richard E. Heckert, chairman and chief executive officer of E.I. du Pont de Nemours and Company, stated the organization's mission in words applicable to all minority enrichment programs: "Our country needs the fully developed talents of all its citizens, just as much as minority youth need a fair chance at success in the demanding career field of engineering."

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